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10/527,218	08/08/2005	Kuniharu Ijio	2005_0408A	2828

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WASHINGTON, DC 20006-1021

EXAMINER

GROSS, CHRISTOPHER M

ART UNIT	PAPER NUMBER
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1639

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/527,218

Applicant(s)

IJIRO ET AL.

Examiner

Christopher M. Gross

Art Unit

1639

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 13 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 3/9/2005.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Responsive to communications entered 4/13/2007. Claims 17-24 are pending. Claims 17-24 are under consideration.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Priority

Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 or 365 as follows:

The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application); the disclosure of the invention in the prior application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Prods., Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994) [taken from MPEP 201.01]

This application has a filing date of 8/8/2005 and is a 371 of PCT/JP03/11514 filed 09/09/2003. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d) to Japanese patent 2002-263434, filed 9/9/2002. Nevertheless, support for: wherein there is interposed between each of the nucleic acid bases (B) at least one nucleic acid base that is not capable of forming a base pair with the nucleic

acid base (A) is not found in the earlier applications. See also new matter considerations under 35 USC 112 first paragraph below.

Therefore 8/8/2005 is the date for the purposes of prior art concerning claims 17-24.

Information Disclosure Statement

The references AJ, AK and AL on the information disclosure statement (IDS) submitted on 3/9/2005 have been considered to the extent of the translated abstract.

Withdrawn Objection(s) and/or Rejection(s)

The rejection of claims 1-16 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is hereby withdrawn in view of applicant's cancellation of claims 1-16.

The rejection of claims 1-2,6,11 and 5 under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Chrisey et al. (1996 Nucleic Acids Research 24:3040-3047) is hereby withdrawn in view of applicant's cancellation of claims 1-16.

The rejection of claims 1-4,6,11-13 and 5, 8-10 under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Koster et al. (US Patent Application 2004/0209255) is hereby withdrawn in view of applicant's cancellation of claims 1-16.

New Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 17-24 are rejected under 35 U.S.C. 102(b) as being anticipated by **Ijima et al** (2002 International J. Nanoscience 1:597-601).

This rejection is necessitated by Applicant's amendment to the claims.

The claimed subject matter per claim 17 is drawn to an organic monolayer membrane which comprises:

- [i] amphiphilic compounds each having a photoisomerization group as a chromophore and a nucleic acid base (A), and
- [ii] one or more oligonucleotides comprising a plurality of nucleic acid bases (B) capable of forming a base pair with the nucleic acid bases (A) wherein there is interposed between each of the nucleic acid bases (B) at least one nucleic acid base that is not capable of forming a base pair with the nucleic acid base (A),
- [iii] wherein the nucleic acid bases (A) of the amphiphilic compounds form base pairs with the nucleic acid bases (B) of the one or more oligonucleotides, and
- [iv] wherein the amphiphilic compounds align to form the organic monolayer membrane.

Claim 18 is drawn to the photoisomerizable group being azobenzene.

Claim 19 is drawn to a laminated organic monolayer.

Claim 20 is drawn to a process for producing said organic monolayer set forth in claim 17.

Claim 21-22 are drawn to the method of claim 20 additionally comprising compressing said monolayer so as to form a laminate on a solid substrate.

Claims 23 is drawn to the process of claim 18 wherein the amphiphilic compounds have an azobenzene group

Claim 24 is drawn to compressing said monolayer of claim 23 so as to form a laminate on a solid substrate.

Ijio et al teach, throughout the document and especially figure 1, the preparation of monolayers comprising amphiphilic compounds each having an azobenzene photoisomerization group as a chromophore and a thymine nucleic acid base, reading on claim 17 [i] and 20.

Also shown in figure 1 is an oligonucleotide (dGGA)₁₀ with adenine capable of forming a base pair with said thymine nucleic acid base wherein there is interposed between each of the nucleic acid bases, guanine bases that are not capable of forward Watson-Crick base pairing with said thymine nucleic acid base, wherein the thymine group of said amphiphilic compound form base pairs with the adenine of said (dGGA)₁₀, oligonucleotide reading on claim 17 [ii-iii] and 20.

Ijio et al discuss in the abstract, that said materials form a monolayer, reading on claim 17 [iv] and 20.

Said azobenzene group of Ijio et al reads on claims 18 and 23.

Ijiro et al teach in figure 2, application of pressure which is taken as the compression set forth in claim 19, and absent evidence to the contrary condenses said membrane so as to form a laminate, as set forth in claims 21, 22 and 24. It is noted that the present specification defines lamination in paragraph 0015 of the published application as: "a membrane obtained by compressing a monolayer is laminated on a solid substrate."

New Claim Rejection(s) – 35 USC § 112

The following is a quotation of the **first** paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 17-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. 37 CFR 1.118 (a) states that "No amendment shall introduce new matter into the disclosure of an application after the filing date of the application".

This rejection is necessitated by Applicant's amendment to the claims.

Claim 17 introduces the limitation: wherein there is interposed between each of the nucleic acid bases (B) at least one nucleic acid base that is not capable of forming a base pair with the nucleic acid base (A). It is noted that in figure 6 of the present

disclosure illustrates Guanine (G) nucleic acid bases as interposed between Adenine:Thymine (A:T) base pairs. It is noted, however, as evidenced by Dutta et al (1998 Nucleic Acids Research 26: 3001-3005) that T and G are capable of base paring. See especially figure 2 b and c according to Dutta et al. Therefore, the specification as originally filed provided no implicit or explicit support for nucleic acid bases incapable of base paring.

Applicants are reminded that it is their burden to show where the specification supports any amendments to the claims. See 37 CFR 1.121 (b)(2)(iii), the MPEP 714.02, 3rd paragraph, last sentence and also the MPEP 2163.07, last sentence.

MPEP 2163.06 notes "If new matter is added to the claims, the examiner should reject the claims under 35 U.S.C. 112, first paragraph - written description requirement. *In re Rasmussen*, 650 F.2d 1212, 211 USPQ 323 (CCPA 1981)." MPEP 2163.02 teaches that "Whenever the issue arises, the fundamental factual inquiry is whether a claim defines an invention that is clearly conveyed to those skilled in the art at the time the application was filed...If a claim is amended to include subject matter, limitations, or terminology not present in the application as filed, involving a departure from, addition to, or deletion from the disclosure of the application as filed, the examiner should conclude that the claimed subject matter is not described in that application. MPEP 2163.06 further notes "When an amendment is filed in reply to an objection or rejection based on 35 U.S.C. 112, first paragraph, a study of the entire application is often necessary to determine whether or not "new matter" is involved. *Applicant should therefore specifically point out the support for any amendments made to the disclosure.*

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Gross whose telephone number is (571)272-4446. The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, J. Douglas Schultz can be reached on 571 272-0763. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Christopher M Gross

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Examiner
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/Jon D. Epperson/

Primary Examiner, AU 1639